Name:_____ Date:_____

PC: Oblique Asymptotes

Do Now:

1. Find the vertical asymptote(s) of the function $y = \dfrac{x+6}{x^2-36}$

2. Find the horizontal asymptote of the function $y = \dfrac{x^2+2x+1}{x+1}$

3. Is there a hole in the graph of $y = \dfrac{x^2+9}{x+3}$?

4. What is the domain of the function $y = \dfrac{x^2-x-12}{x-4}$?

5. Are there any x- or y- intercepts for the graph of $y = \dfrac{3x^2+x-2}{x+1}$? If so, state them.

When the end behavior of a rational function is not horizontal (meaning there is no horizontal asymptote), it is oblique.

Recall: In what situation is there no horizontal asymptote for a rational function?

To find oblique asymptotes:

1. **reduce the function if possible**
2. **divide the numerator by the denominator using long or synthetic division**
3. **the oblique asymptote is y = the quotient**

1. Find the oblique asymptote of $y = \dfrac{x^2-3x+5}{x+2}$

2. Find the oblique asymptote of $y = \frac{x^2}{x+1}$.

3. Find the oblique asymptote for $y = \frac{x^2 - 4}{x}$

4. Find the oblique asymptote of $y = \frac{x^2 - 1}{-x+3}$